

## Does overall diet in midlife predict future aging phenotypes? A cohort study.

Tasnime Akbaraly, Séverine Sabia, Gareth Hagger-Johnson, Adam Tabak, Martin Shipley, Markus Jokela, Eric Brunner, Mark Hamer, David Batty, Archana Singh-Manoux, et al.

### ► To cite this version:

Tasnime Akbaraly, Séverine Sabia, Gareth Hagger-Johnson, Adam Tabak, Martin Shipley, et al.. Does overall diet in midlife predict future aging phenotypes? A cohort study.: Overall Diet and Aging Phenotypes. The American Journal of Medicine, Elsevier [Commercial Publisher] 2013, 126 (5), pp.411-419.e3. <10.1016/j.amjmed.2012.10.028>. <inserm-00828110>

**HAL Id: inserm-00828110**

**<http://www.hal.inserm.fr/inserm-00828110>**

Submitted on 30 May 2013

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Appendix-Table A: Factor loading† for high loading items ( $\geq 0.40$ )‡ on the two dietary patterns identified using principal component analysis at baseline.

	1 <sup>st</sup> Pattern: "Healthy-foods"	2 <sup>nd</sup> Pattern: "western-type"
Leafy vegetables	0.69	-
Other vegetables	0.67	-
Tomatoes	0.59	-
Salad dressing	0.50	-
Fruits	0.49	-
Fish	0.46	-
Cruciferous vegetables	0.44	-
Fried food	-	0.56
Processed meats	-	0.52
Quiche/Pie	-	0.47
Chocolate and sweets	-	0.46
Desserts/biscuits	-	0.45
Condiments	-	0.45
High fat dairy products	-	0.42
Refined grain	-	0.42
Red Meat	-	0.41

Two dietary patterns were identified using multiple criteria: the diagram of Eigen values, the Screeplot, the interpretability of the factors and the percentage of variance explained by the factors.

†Factor loadings represent the correlation between the food groups and the dietary pattern<sup>12</sup>

‡ Values < 0.30 were not listed in order to simplify interpretation of the factors

Appendix-Table B: Construction of AHEI scores in 5350 participants.

Components	Criteria for min. score	Criteria for max. score	Possible score range	AHEI scores in the participants * M ±SD
Vegetable (serving /day)	0	5	0-10	5.6 (2.9)
Fruit (serving /day)	0	4	0-10	5.9 (3.1)
Nuts and Soy (serving /day)	0	1	0-10	3.2 (3.0)
Ratio of white to red meat	0	4	0-10	5.1 (2.8)
**Total Fiber (% of energy)	0	24	0-10	7.6 (3.0)
Trans Fat (% of energy )	≥4	≤0.5	0-10	8.4 (2.7)
Ratio of PUFA to SFA	≤0.1	≥1	0-10	5.2 (2.7)
Duration of multivitamin Use	<5 year	≥5 year	2.5-7.5	4.2 (2.4)
Alcohol serving/day Men:	0 or >3.5	1.5-2.5	0-10	4.7 (3.7) †
Alcohol serving/day Women:	0 or >2.5	0.5-1.5	0-10	
<b>Total Score</b>			<b>2.5-87.5</b>	<b>50.0 (12.0)</b>

Abbreviation: AHEI, the alternative healthy eating index; PUFA, Polyunsaturated fatty acids; SFA, saturated fatty acids.

\*Each AHEI component contributed from 0 to 10 points to the total AHEI score, except the multivitamin component which was dichotomous and contributing either 2.5 points (for non-use) or 7.5 points (for use) A score of 10 indicates that the recommendations were fully met, whereas a score of 0 represents the least healthy dietary behavior. Intermediate intakes were scored proportionately between 0 and 10.

\*\*The original components of the index include cereal fiber, because cereal fiber was not available in our nutrient data set, we adapted the score by replacing it with total fiber.

† Mean score for men and women combined.

Appendix table C: Association between the two dietary patterns, AHEI scores and the four aging outcomes (n=5350).

Dietary pattern		Ideal Aging		Non Fatal CVD		Fatal CVD		Non CVD Death		P
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	
<b>"Healthy-foods" pattern</b>										
Model 1	Tertile 1	1	reference	1	reference	1	reference	1	reference	0.008
	Tertile 2	1.23	0.87-1.74	0.97	0.79-1.20	0.63	0.42-0.95	0.67	0.52-0.87	
	Tertile 3	1.16	0.80-1.69	1.06	0.86-1.32	0.67	0.44-1.02	0.73	0.56-0.96	
	Effect per 1SD	1.07	0.93-1.24	1.03	0.95-1.13	0.85	0.70-1.03	0.83	0.73-0.94	
Model 2	Tertile 1	1	reference	1	reference	1	reference	1	reference	0.19
	Tertile 2	1.23	0.87-1.74	0.97	0.79-1.20	0.63	0.42-0.95	0.67	0.52-0.87	
	Tertile 3	1.08	0.74-1.58	1.15	0.92-1.43	0.78	0.51-1.21	0.86	0.66-1.14	
	Effect per 1SD	1.04	0.90-1.21	1.06	0.97-1.16	0.93	0.77-1.13	0.90	0.80-1.02	
<b>"Western-type" pattern</b>										
Model 1	Tertile 1	1	reference	1	reference	1	reference	1	reference	<10 <sup>-4</sup>
	Tertile 2	0.92	0.65-1.30	0.85	0.68-1.06	1.36	0.87-2.12	0.88	0.66-1.17	
	Tertile 3	0.54	0.34-0.85	1.08	0.82-1.41	1.68	0.96-2.95	1.23	0.88-1.74	
	Effect per 1SD	0.77	.061-0.95	1.09	0.95-1.25	1.58	1.20-2.08	1.38	1.16-1.64	
Model 2	Tertile 1	1	reference	1	reference	1	reference	1	reference	0.05
	Tertile 2	0.94	0.66-1.33	0.83	0.67-1.04	1.25	0.80-1.95	0.81	0.61-1.08	
	Tertile 3	0.58	0.36-0.94	1.02	0.78-1.34	1.40	0.80-2.47	0.96	0.68-1.35	
	Effect per 1SD	0.83	0.66-1.05	1.03	0.89-1.18	1.35	1.02-1.78	1.16	0.97-1.38	
<b>AHEI score"</b>										
Model 1	Tertile 1	1	reference	1	reference	1	reference	1	reference	<10 <sup>-4</sup>
	Tertile 2	1.52	1.07-2.16	0.85	0.69-1.04	0.48	0.32-0.72	0.67	0.52-0.86	
	Tertile 3	1.16	0.80-1.68	0.98	0.80-1.21	0.49	0.32-0.74	0.60	0.46-0.78	
	Effect per 1SD	1.09	0.95-1.27	0.97	0.89-1.06	0.70	0.59-0.83	0.75	0.67-0.83	
Model 2	Tertile 1	1	reference	1	reference	1	reference	1	reference	0.006
	Tertile 2	1.41	0.99-2.01	0.90	0.73-1.10	0.54	0.35-0.81	0.76	0.59-0.98	
	Tertile 3	1.04	0.71-1.52	1.07	0.87-1.32	0.59	0.38-0.90	0.74	0.56-0.96	
	Effect per 1SD	1.04	0.90-1.21	1.01	0.93-1.11	0.77	0.65-0.92	0.83	0.74-0.92	

AHEI: alternative Healthy Eating Index

Natural Aging was the "non-case" category for all aging phenotype outcomes presented

p for heterogeneity

Multinomial logistic regression to analyze associations between dietary patterns, AHEI score and the 5-category aging outcome: (1) ideal health, (2) non-fatal cardiovascular disease at follow-up, (3) cardiovascular death, (4) non-cardiovascular death, and (5) natural (or normal) aging (the non-case category for each of the other categories).

Model 1: Adjusted for age, sex and total energy intake

Model 2: As Model 1 + additionally adjusted for other health behaviour: smoking habits and physical activity